



**2019/TDC/ODD/SEM/BTCDSC/
BTCGE-301T/244**

TDC (CBCS) Odd Semester Exam., 2019

BIOTECHNOLOGY

(3rd Semester)

Course No. : BTCDSC/BTCGE-301T

(Developmental Biology)

Full Marks : 50

Pass Marks : 20

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

UNIT—I

1. Answer any *three* of the following questions :

1×3=3

- (a) What do you mean by spermiogenesis?
- (b) What is a Graafian follicle?
- (c) Define ovulation.
- (d) What is a zygote?

2. Answer any *one* of the following questions : 2

- (a) Differentiate between internal and external fertilization.
- (b) What are microlethical eggs? Name an organism that lays such eggs.



3. (a) Give a short account of spermatogenesis. 5

Or
(b) Briefly write about the different phases of oogenesis. 5

UNIT—II

4. Answer any three of the following questions : 1×3=3

- (a) What is embryonic cleavage?
- (b) Define blastocyst.
- (c) Name an organism that exhibits epiboly.
- (d) What is gastrulation?

5. Answer any one of the following questions : 2

- (a) Distinguish between epiboly and emboly.
- (b) Name the three primary germ layers.

6. (a) Briefly state the mechanism of blastulation with suitable illustration. 5

Or
(b) What is fate mapping? Why is it performed? 3+2=5

UNIT—III

7. Answer any three of the following questions : 1×3=3

- (a) Define differentiation.
- (b) What is terminal differentiation?
- (c) What do you mean by totipotency?
- (d) Name a gene expressed in induced pluripotent stem cells.

8. Answer any one of the following questions : 2

- (a) With an appropriate example, illustrate what is cell commitment.
- (b) State the properties of cells that are altered in cell differentiation.

9. (a) Briefly discuss how cell signalling controls cell differentiation. 5

Or
(b) Write a brief account on the epigenetic control of cell differentiation. 5

(4)



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(5)

UNIT—IV

UNIT—V

10. Answer any *three* of the following questions :

1×3=3

- (a) Define embryonic induction.
- (b) What is neural induction?
- (c) Name the scientist who received the Nobel Prize in 1935 for his work on embryonic induction.
- (d) What is an inductor?

11. Answer any *one* of the following questions :

2

- (a) Differentiate between endogenous and exogenous induction.
- (b) Differentiate between secondary and tertiary embryonic induction.

12. (a) Briefly describe the mechanism of neural induction.

5

Or

(b) Write a brief note on induction of vertebrate lens.

5

13. Answer any *three* of the following questions :

1×3=3

- (a) Define neurulation.
- (b) What is a notochord?
- (c) What are extra-embryonic membranes?
- (d) Define placenta.

14. Answer any *one* of the following questions :

2

- (a) How are chorionic villi formed in the placenta?
- (b) What is notogenesis?

15. (a) Give the fate of different primary germ layers.

5

Or

(b) Discuss the functions of the mammalian placenta.

5

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20J/1270

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20J—110/1270